APPENDIX E

U.S. DEPARTMENT OF ENERGY R&D ON FUEL CELLS FOR TRANSPORTATION: NEW PROJECTS UNDER DOE PRDA

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Membrane	Foster-Miller	Microporous composite PEM (ASR<0.05 Ω•cm^2, <0.1% crossover of gases) / kW stack
Electrode	3 M	Nano-structured electrode (CO tolerance 100 ppm, 0.1 mg Pt/cm^2) / multi-cell stack
	Spectracorp	Optimum carbon vilter paper structure and electrical properties for gas diffusion / 200 m^2 carbon paper

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Bipolar Plate	ElectroChem	Low-cost, layered plate (conductivity > 100 S/cm, perm. < 0.1 mA/cm^2, equiv. / short stack
	IGT	Hydrophilic graphite composite plates (<$10/kW) / production line design

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Stack Engineering	Energy Partners	PEM fuel cell with composite plates / 50-kW reformate capable stack
Goal: 350 W/L 350 W/kg 51% efficiency @ 50 kW $100/kW	Allied Signal	PEM fuel cell with metal plates / 50-kW reformate capable stack
	Analytic Power	PEM fuel cells for testing cell components / two 3-kW stacks

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Fuel Processor	Arthur D. Little	Fuel-flexible reformer (under Processor/Stack Integration) / 50-kW POX with PROX
Goal: 600 W/L 600 W/kg 70% efficiency $30/kW	Hydrogen Burner Technology	Fuel-flexible reformer / 50-kW POX w/advanced CO cleanup
		Natural gas reformer under Office of Building Technologies / 50-kW POX design

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Controls/ Ancilliaries	Allied Signal	High efficiency turbo compressor-expander / 75 g/s unit
Compressor-Expander Goal: 4 liters, 3 kg, 68% efficiency, $200	Arthur D. Little	Advanced scroll compressor-expander / 75 g/s unit
	Vairex	Advanced variable displacement compressor-expander / 80 g/s unit
	Meruit	High efficiency bearing/ Radial + Thrust Gas Bearing

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Processor/Stack Integration	Mechanical Technology Inc.	Fuel flexible integrated power system/ 50-kw system
Goal: 250 W/L 250 W/kg 40% efficiency $30/kW $150/kg	International Fuel Cells	Fuel-flexible integrated power system/ 50-kw system

Focused Projects Under New DOE PRDA

R&D Task	Organization	Objective/ Deliverable
Hydrogen Storage	Thiokol	Conformable high-pressure storage tank / 1.8 kg H_2 @ 5000psi
Goal: 10% wt. H_2		
	Thermo Power	Chemical hydride - organic slurry H_2 system/ 3 kg/h H_2 fueling system